Source Water Protection Conference
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Mine Waste Cleanup
Within a Source Watershed

Shahid Mahmud, U.S. EPA Leader – Abandoned Mine Lands Team
Jesse Aber, Water Resources DNRC
Bo Stuart, Hydrologist Helena N.F.
Upper Tenmile Creek Watershed

Upper Tenmile Creek Watershed

- Provides 75% of Helena's water
- 18 significant mine complexes, approximately 150 mine sites
- Highest priority watershed on the State's 303(d) list

Entrance to the Watershed

Welcome to Upper Tenmile!

Background:

- Montana DEQ Cleans up some mines;
- County WQPD Focus on Watershed
- Upper Tenmile Watershed Group forms 1996;
- Watershed Group I.D.s Objectives
- Assessments Begin
- Alternatives Identified
- Educate and Move Forward
- EPA Removal Program Begins
- Governor Signs Off On NPL Fall of 1999

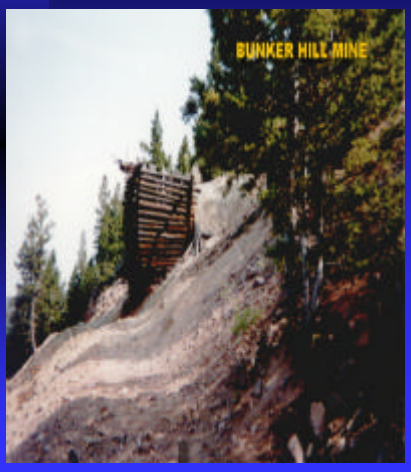
Presentation Overview

- Problems Identified
- The stimulus
- Create Opportunities
- Collaborative Stewardship
- Practical approaches to complex issues

Problem Definition

- Contaminated domestic water supplies;
- Contaminated yards;
- Releases of mine waste into streams via erosion and mine adit drainage.

Bunker Hill Mine



- Two mass releases of mine waste into Tenmile Creek

Red Mountain Mine

- Massive erosion into Tenmile Creek
- Waste piles over water diversions
- Significant dissolved metal loading.

The stimulus that created opportunities

- Upper Tenmile Watershed Steering Group
- State of Montana 303(d) Impaired Water Body List
- MT DEQ Abandoned Mines Program
- Lewis & Clark County WQPD
- The issue was ripe
- Stakeholders recognized solution required a collaborative response using a watershed approach

Rimini Community Center

The Upper Tenmile Watershed Steering Group, Montana DEQ Abandoned Mines Program, Lewis and Clark County WQPD and stakeholders recognized that a solution required a collaborative response and use a watershed approach. Meetings were set up in the local community center and schoolhouse, when possible.

Action Central - Schoolhouse

Watershed Meeting

The meetings produced actions or opportunities to reduce contamination. These included removing abandoned mine waste, publicizing the protection of Helena Source Watershed, using the Clean Water Act Mandate for TMDLs, increasing stream flows in Tenmile, managing water supplies better, managing watershed development, creating sustainable fisheries habitat, addressing noxious weeds, restoring riparian areas, providing potable water for Rimini, providing educational opportunities, providing wildfire protection and forming Water and Sewer District.

State and federal programs were leveraged. These programs include Abandoned Mine Waste Programs, 319 Grants, USGS hydrologic characterization, FWP Future Fisheries Program, Montana Noxious Weed Trust Fund and BOR Assistance to state programs.

Creating Opportunities

- Creating Sustainable Fisheries Habitat
- Address Noxious Weeds
- Riparian Restoration
- Potable Water for Rimini
- Educational Opportunities
- Wildfire Protection
- Water and Sewer District Formed

Moose Creek Ranger Station
Built in 1906 – New Roof 2002

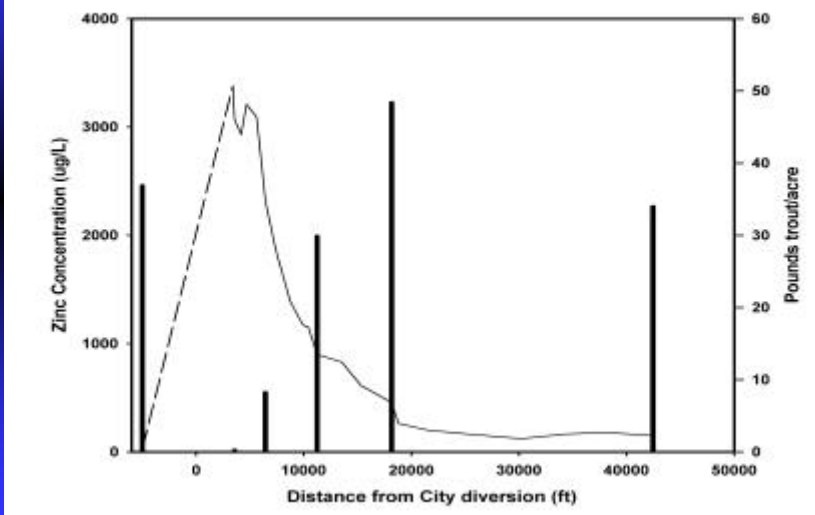
Seven stations – Seventy Students!

Watershed Educational Tour

Superfund Station

Low Flow Metals Concentration

Metals - Limitations to Fishery



Fish population surveys – Compare impacted with unimpacted reaches

Insect population/diversity surveys – Compare impacted with unimpacted

Sample metals residues in fish and insect tissue, sediments, biofilm, & water – Measurement to separate impacted and umimpacted stream reaches and characterize contamination at different levels of food chain.

Brook trout spawning survey – Survey spawning redds and quantity of suitable gravels and spawning habitat. Determine how metals proximity limits reproduction.

Physical habitat simulation & wetted perimeter measurements – Change in fish living space and food-producing habitat as a function of flow. Has implications for sustainability of fishery relative to stream dewatering.

MATCHING FUNDS AND SERVICES

CERCLA, EPA Removal, Remedial Forest Service, BOR Managed Construction, BLM

319 Grant – Local WQPD, DNRC, DEQ, USGS, EPA

Hydro Characterization – Volunteers, Tracer Study EPA/FS, USGS,

Riparian Restoration – Tree planting, FWP-future fisheries, Walmart, DNRC, EPA, FS, Volunteers, MCC, Conservation district, NRCS

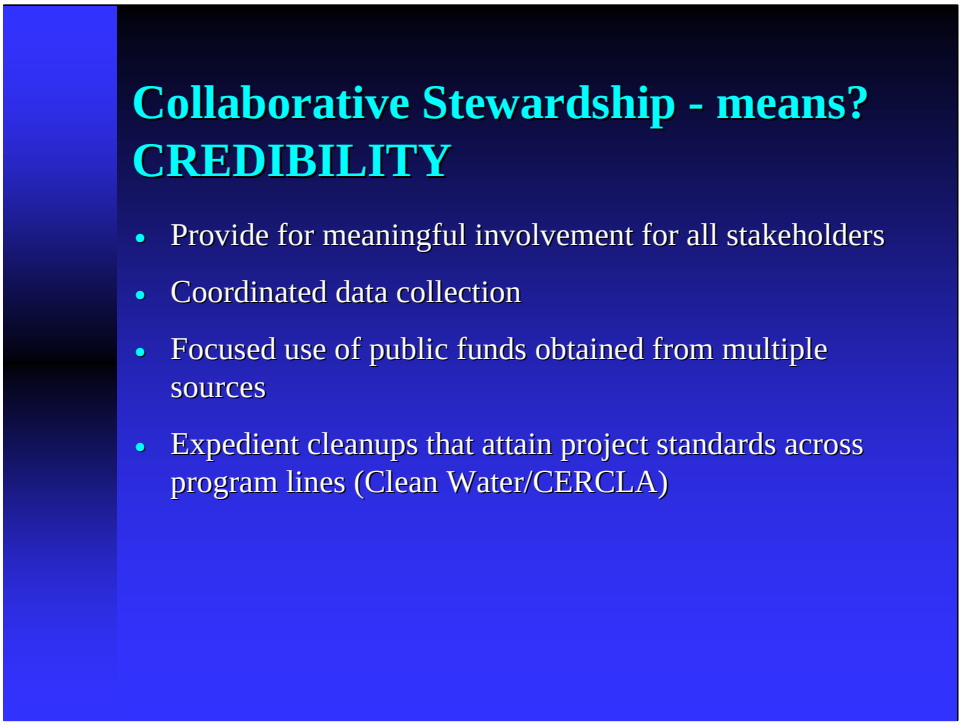
Noxious Weeds – Mt Dept Ag., MSU Extension, DNRC, County, FS, Volunteers, City, Residents/property owner,

Assistance to States – Cooperator on hydrologic characterization

Streambank Stabilization
Habitat Improvement Project

National Priorities Listing (NPL)

- Watershed Group Instrumental In Listing:
  - City of Helena;
  - Lewis and Clark County;
  - Rimini and local residents;
  - Montana DEQ
  - Governor’s Support



Collaborative stewardship is necessary to show credibility by providing meaningful involvement for all stakeholders, coordinated data collection, focused use of public funds obtained from multiple sources and expedient cleanups that attain project standards across program lines.

To form a collaborative stewardship, a lead agency was designated to relay key messages to the public and to the local and state government. The group decided to have a common repository for mine wastes. Data would be shared among all stakeholders.

The State of Montana would provide ten percent share of final EPA remedies and long-term operation and maintenance (ten years after the remedy for discharging audits). The City of Helena agreed to cooperate as long as their water rights were intact, unfair burden on the City of Helena was not created and the solution was created with a holistic approach (i.e., addresses issues from a systems or watershed approach).

Luttrell Repository

Roles of Multiple Agencies Within Common Watershed Boundaries

- USGS- Long term monitoring of surface water & data interpretation
- BLM, USFS, DEQ & EPA
  - Lead Agency as appropriate
  - Support Agency
  - Participation in operations and maintenance and monitoring
- State of Montana
  - Ten percent cost share of final EPA remedies
  - Long-term O & M (ten years after the remedy for discharging adits)

Proofs and Puddings

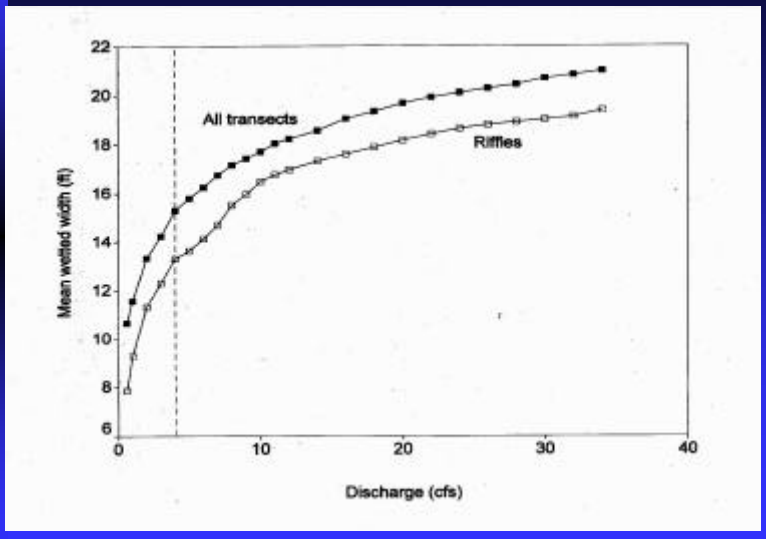
City of Helena Ground Rules For Remedy Identification:

- Leave Helena's water rights intact;
- Don't create an unfair burden on City of Helena rate payers;
- Create a solution that is holistic (i.e., addresses issues from a systems or watershed approach)

Drought Augmentation Reach

Confluence of Upper Tenmile and Minnehaha Creek

Wetted Perimeter study results



Proposed Remedy:

- Rimini Water Supply;
- Contaminated yards;
- Waste Rock and Tailings;
- Acid mine drainage;
- Groundwater contamination;
- Surface water contamination.

Media Coverage of Projects

City of Helena Continued Support:

- Ownership and long-term maintenance Red Mountain Flume and Chessman Reservoir;
- Manage releases of additional stored water from locations best suited to meet objectives of the remedy.

Flow Augmentation Source

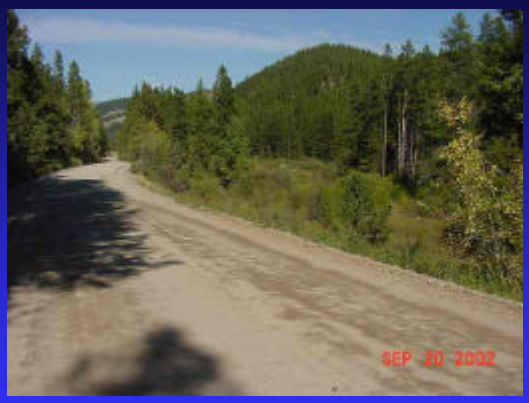
Minnehaha Creek Diversion
Siphon 2001

Barriers and Overcoming Them

- Intra and Interagency Barriers
- Mixing of Wastes in Luttrell Repository
- Residents' concern over change
- Water rights & property rights
- Multiple land management agencies
- Differing views of desired condition

The greatest barriers were intra and interagency barriers, mixing of wastes in Luttrell Repository, residents' concern over change, water and property rights, multiple land management agencies and differing views of desired condition. The lessons learned were that differences between ideas lead to better decisions, listening to concerns of stakeholders helped get buy-in, working together was more efficient, and all decisions should be centered on the watershed as a whole.

Thanks on behalf of the Upper Tenmile Watershed Steering Group



See you at the Resource Fair